

IN THE SPECIFICATION

Please amend the paragraph at page 32, line 16 to page 33, line 4, as follows:

By using the values obtained of the electrical resistivity, the Seebeck coefficient and the thermal conductivity, the dimensionless figure-of-merit ZT was determined according to the aforementioned formula (1). The values of the electrical resistivity, the Seebeck coefficient, the lattice thermal conductivity and the dimensionless figure-of-merit ZT all obtained at temperatures of 300K and 700K were as follows.

300K: Electrical resistivity =  $8.62 \times 10^{-3} \Omega \text{ cm}$ ;

Seebeck coefficient =  $-333 \mu\text{V/K}$ ;

Lattice thermal conductivity =  $3.05 \text{ W/mK}$ ;

~~TZ~~ = ~~0.12~~ ZT = 0.12

700K: Electrical resistivity =  $2.35 \times 10^{-3} \Omega \text{ cm}$ ;

Seebeck coefficient =  $-328 \mu\text{V/K}$ ;

Lattice thermal conductivity =  $1.95 \text{ W/mK}$ ;

~~TZ~~ = ~~1.2~~ ZT = 1.2

Please amend the paragraph at page 33, line 21 to page 34, line 14, as follows:

99.9% pure Zr, 99.9% pure Hf, 99.99% pure Ni and 99.99% pure Sn were prepared as raw materials, which were then weighed respectively so as to meet a composition formula of  $\text{Zr}_{0.5}\text{Hf}_{0.5}\text{NiSn}$ . By using the raw powder weighed in this manner, a sintered body was manufactured by the same procedures as explained in Example I-1 and the resultant sintered body was evaluated with respect to the thermoelectric characteristics thereof. The values of the electrical resistivity, the Seebeck coefficient, the lattice thermal conductivity and the dimensionless figure-of-merit ZT all obtained at temperatures of 300K and 700K were as follows.

300K: Electrical resistivity =  $9.6 \times 10^{-3} \Omega \text{ cm}$ ;

Seebeck coefficient =  $-180 \mu\text{V/K}$ ;

Lattice thermal conductivity =  $3.95 \text{ W/mK}$ ;

$\text{TZ} = 0.02$   $\text{ZT} = 0.02$

700K: Electrical resistivity =  $2.3 \times 10^{-3} \Omega \text{ cm}$ ;

Seebeck coefficient =  $-272 \mu\text{V/K}$ ;

Lattice thermal conductivity =  $3.49 \text{ W/mK}$ ;

$\text{TZ} = 0.53$   $\text{ZT} = 0.53$

Please amend Table 1 on page 36, shown on the following page, as follows:

Table 1

Examples	Content of Ti a <sub>1</sub>	Content of Zr b <sub>1</sub>	Content of Hf c <sub>1</sub>	300K		700K	
				Lattice thermal conduc- tivity	Dimen- sionless performance figure-of- merit index ZT	Lattice thermal conduc- tivity	Dimen- sionless performance figure-of- merit index ZT
I-1	0.3	0.35	0.35	3.05	0.12	1.95	1.20
I-2	0.01	0.01	0.98	3.66	0.06	2.50	1.01
I-3	0.01	0.98	0.01	3.7	0.05	2.51	1.00
I-4	0.98	0.01	0.01	3.71	0.05	2.55	1.00
I-5	0.02	0.49	0.49	3.61	0.07	2.40	1.05
I-6	0.49	0.02	0.49	3.79	0.07	2.45	1.03
I-7	0.49	0.49	0.02	3.80	0.06	2.47	1.02
I-8	0.1	0.1	0.8	3.55	0.08	2.10	1.10
I-9	0.1	0.8	0.1	3.50	0.08	2.16	1.08
I-10	0.8	0.1	0.1	3.58	0.09	2.20	1.07
I-11	0.35	0.3	0.35	2.95	0.13	1.90	1.17
I-12	0.35	0.35	0.3	3.00	0.12	1.95	1.20
I-13	0.1	0.45	0.45	3.67	0.08	2.25	1.09
I-14	0.45	0.1	0.45	3.45	0.07	2.08	1.07
I-15	0.45	0.45	0.1	3.55	0.07	2.15	1.10
I-16	0.2	0.4	0.4	3.36	0.10	2.10	1.16
I-17	0.4	0.2	0.4	3.20	0.09	1.99	1.13
I-18	0.4	0.4	0.2	3.28	0.10	2.05	1.11
I-19	0.5	0.25	0.25	3.27	0.12	2.05	1.18
I-20	0.25	0.5	0.25	3.18	0.12	2.01	1.16
I-21	0.25	0.25	0.5	3.23	0.11	2.02	1.15

Please amend Table 1 on page 37, shown on the following page, as follows:

Table 1

	Content of Ti a <sub>1</sub>	Content of Zr b <sub>1</sub>	Content of Hf c <sub>1</sub>	300K		700K		
				Lattice thermal conductivity	Dimen- sionless performance figure-of- merit index ZT	Lattice thermal conductivity	Dimen- sionless performance figure-of- merit index ZT	
Comparative Examples	I-1	0.0	0.5	0.5	3.95	0.02	3.49	0.53
	I-2	0.5	0.0	0.5	4.11	0.02	3.61	0.48
	I-3	0.5	0.5	0.0	4.65	0.01	4.05	0.35
	I-4	1.0	0.0	0.0	9.75	0.01	6.35	0.27
	I-5	0.0	1.0	0.0	8.25	0.01	5.55	0.24
	I-6	0.0	0.0	1.0	7.75	0.01	5.15	0.20
	I-7	0.0	0.85	0.15	5.35	0.01	4.15	0.39
	I-8	0.0	0.7	0.3	4.45	0.01	3.85	0.48
	I-9	0.15	0.85	0.0	5.81	0.01	4.50	0.30
	I-10	0.3	0.7	0.0	4.92	0.01	4.22	0.33

Please amend Table 2 on page 40, shown on the following page, as follows:

Table 2

	Substituting elements X	Content of substituting elements e	300K		700K	
			Lattice thermal conductivity	Dimensionless performance figure-of-merit index ZT	Lattice thermal conductivity	Dimensionless performance figure-of-merit index ZT
I-22	V	0.003	3.21	0.24	1.93	1.19
I-23	V	0.01	3.10	0.27	1.84	1.27
I-24	V	0.03	3.04	0.24	1.81	1.20
I-25	V	0.10	2.95	0.22	1.77	1.08
I-26	Nb	0.003	3.08	0.26	1.85	1.24
I-27	Nb	0.01	3.05	0.28	1.81	1.29
I-28	Nb	0.03	3.01	0.27	1.77	1.22
I-29	Nb	0.10	2.95	0.25	1.70	1.10
I-30	Ta	0.003	3.00	0.27	1.83	1.26
I-31	Ta	0.01	2.94	0.28	1.79	1.30
I-32	Ta	0.03	2.90	0.28	1.74	1.28
I-33	Ta	0.10	2.85	0.24	1.69	1.23

Examples



Please amend Table 3 on page 42 as follows:

Table 3

	Substituting elements x	Content of substituting elements e	300K		700K	
			Lattice thermal conductivity	Dimensionless performance figure-of-merit $\frac{\kappa}{ZT}$	Lattice thermal conductivity	Dimensionless performance figure-of-merit $\frac{\kappa}{ZT}$
I-34	V	0.003	3.35	0.21	2.08	1.17
I-35	V	0.01	3.26	0.24	2.00	1.24
I-36	V	0.03	3.20	0.20	1.95	1.16
I-37	V	0.10	3.06	0.18	1.90	1.06
I-38	Nb	0.003	3.22	0.24	2.00	1.21
I-39	Nb	0.01	3.19	0.26	1.95	1.26
I-40	Nb	0.03	3.14	0.24	1.90	1.18
I-41	Nb	0.10	3.09	0.21	1.83	1.08
I-42	Ta	0.003	3.13	0.25	1.98	1.23
I-43	Ta	0.01	3.07	0.27	1.93	1.28
I-44	Ta	0.03	3.04	0.26	1.87	1.24
I-45	Ta	0.10	2.97	0.22	1.80	1.20

Examples

Please amend Table 4 on page 45, shown on the following page, as follows:

Table 4

	Content of substituting elements f	300K		700K	
		Lattice thermal conductivity	Dimensionless performance figure-of- merit index $ZT$	Lattice thermal conductivity	Dimensionless performance figure-of- merit index $ZT$
I-46	0.003	3.15	0.26	1.89	1.21
I-47	0.01	3.08	0.29	1.83	1.28
I-48	0.03	3.01	0.26	1.79	1.22
I-49	0.10	2.96	0.24	1.73	1.17

Please amend Table 5 on page 47, shown on the following page, as follows:

Table 5

	Content of substituting elements f	300K		700K	
		Lattice thermal conductivity	Dimensionless performance figure-of- merit index ZT	Lattice thermal conductivity	Dimensionless performance figure-of- merit index ZT
I-46	0.003	3.30	0.22	1.95	1.17
I-47	0.01	3.21	0.26	1.90	1.25
I-48	0.03	3.11	0.21	1.82	1.17
I-49	0.10	3.06	0.19	1.78	1.12

Please amend Table 6 on page 50, shown on the following page, as follows:

Table 6

	Substituting elements x	Content of substituting elements g	300K		700K	
			Lattice thermal conductivity	Dimensionless performance figure-of- merit <del>index</del> ZT	Lattice thermal conductivity	Dimensionless performance figure-of- merit <del>index</del> ZT
Examples	I-54	Sb	3.07	0.29	1.95	1.07
	I-55	Sb	3.01	0.32	1.89	1.19
	I-56	Sb	2.95	0.28	1.83	1.14
	I-57	Sb	2.91	0.25	1.77	1.08
	I-58	Bi	2.97	0.29	1.81	1.04
	I-59	Bi	2.90	0.33	1.72	1.15
	I-60	Bi	2.83	0.29	1.67	1.11
	I-61	Bi	2.77	0.26	1.61	1.04



Please amend Table 7 on page 52, shown on the following page, as follows:

Table 7

	Substituting elements X	Content of substituting elements g	300K		700K	
			Lattice thermal conductivity	Dimensionless performance figure-of- merit index ZT	Lattice thermal conductivity	Dimensionless performance figure-of- merit index ZT
Examples	I-62	Sb	3.27	0.26	2.05	1.20
	I-63	Sb	3.21	0.28	1.98	1.22
	I-64	Sb	3.14	0.27	1.94	1.16
	I-65	Sb	3.10	0.23	1.86	1.12
	I-66	Bi	3.16	0.26	1.90	1.15
	I-67	Bi	3.10	0.29	1.83	1.19
	I-68	Bi	3.04	0.28	1.77	1.13
	I-69	Bi	2.96	0.26	1.70	1.08

Please amend the paragraph at page 69, lines 8-23, as follows:

By using the values obtained of the electrical resistivity, the Seebeck coefficient and the thermal conductivity, the dimensionless figure-of-merit  $ZT$  was determined according to the aforementioned formula (1). The values of the electrical resistivity, the Seebeck coefficient, the lattice thermal conductivity and the dimensionless figure-of-merit  $ZT$  all obtained at temperatures of 300K and 700K were as follows.

300K: Electrical resistivity =  $47.5 \times 10^{-3} \Omega \text{ cm}$ ;

Seebeck coefficient =  $351 \mu\text{V/K}$ ;

Lattice thermal conductivity =  $3.18 \text{ W/mK}$ ;

~~$TZ = 0.02$~~   $ZT = 0.02$

700K: Electrical resistivity =  $2.82 \times 10^{-3} \Omega \text{ cm}$ ;

Seebeck coefficient =  $311 \mu\text{V/K}$ ;

Lattice thermal conductivity =  $1.79 \text{ W/mK}$ ;

~~$TZ = 1.04$~~   $ZT = 1.04$

Please amend the paragraph at page 70, line 15 to page 71, line 8, as follows:

99.9% pure Y, 99.9% pure Er, 99.99% pure Pd, and 99.99% pure Sb were prepared as raw materials, which were then weighed respectively so as to meet a composition formula of:  $\text{Y}_{0.5}\text{Er}_{0.5}\text{PdSb}$ . By using the raw powder weighed in this manner, a sintered body was manufactured by the same procedures as explained in Example II-1 and the resultant sintered body was evaluated with respect to the thermoelectric characteristics thereof. The values of the electrical resistivity, the Seebeck coefficient, the lattice thermal conductivity and the dimensionless figure-of-merit  $ZT$  all obtained at temperatures of 300K and 700K were as follows.

300K: Electrical resistivity =  $29.0 \times 10^{-3} \text{ cm}$ ;

Seebeck coefficient =  $155 \text{ } \mu\text{V/K}$ ;

Lattice thermal conductivity =  $2.97 \text{ W/mK}$ ;

~~TZ=0.00~~ ZT = 0.00

700K: Electrical resistivity =  $2.1 \times 10^{-3} \text{ } \Omega\text{cm}$ ;

Seebeck coefficient =  $190 \text{ } \mu\text{V/K}$ ;

Lattice thermal conductivity =  $1.29 \text{ W/mK}$ ;

~~TZ=0.57~~ ZT = 0.57